Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method of image processing comprising:

receiving first and second images representative of the same object viewed from a first and a second view point;

storing for each point in an array of points in said first image, an estimated transform required to match a portion of said first image identified by said point corresponding to part of said object to the portion of said second image representative of the same part of said object;

identifying an initial seed point within said array and adding data identifying said seed point to a queue of data identifying points to be processed; and

sequentially processing each of the points identified by said queue, by:

adding data to the end of said queue identifying points in said array which are adjacent to the point identified by data at the head of the queue and for which no calculated transform has been determined;

~~utilising~~utilizing said stored estimated transform for the point identified by data at the head of the queue to determine a calculated transform for said point to match the portion of said first image identified by said point to said corresponding portion of said second image; and

updating said stored estimated transforms for adjacent points in said array to said point for which a calculated transform is determined ~~utilising~~utilizing said calculated transform.

2. (Currently Amended) ~~A method in accordance with~~The method of claim 1 wherein said portion of said first image identified by a point comprises a portion of said image ~~centred~~centered on said point.

3. (Currently Amended) ~~A method in accordance with~~The method of claim 2 wherein said updating of stored estimated transforms comprises:

determining a first value indicative of the correspondence between said portion of said first image identified by said point and a portion of said second image identified by applying said stored estimated transform to said portion of said first image;

determining a second value indicative of the correspondence between said portion of said first image identified by said point and a portion of said second image identified by applying said calculated transform for said adjacent point to said portion of said first image; and

if said second value is indicative of a closer correspondence, replacing said stored estimated transform for said point with said calculated transform for said adjacent point.

4. (Currently Amended) ~~A method in accordance with~~The method of claim 3 wherein said first and said second images comprise grey scale images and said first and said second values comprise calculated difference in grey scale values between said portion of said first image and said identified portion of said second image.

5. (Currently Amended) ~~A method in accordance with~~The method of claim 1 further comprising storing data identifying in said array the number of times data, each point is added to said queue and only adding data to said queue identifying a point if the said point has been added to said queue fewer than a predetermined number of times.

6. (Currently Amended) ~~A method in accordance with~~The method of claim 1 wherein a stream of video images are received said stream of video images comprising pairs of images representative of the same object viewed from said first and said second view point, wherein said storage of an estimated transform for matching points in said pairs of images of said video stream comprises storing calculated transforms for said points in said array for a previous frame of images in said video stream.

7. (Currently Amended) ~~A method in accordance with~~The method of claim 1 wherein said determination of a calculated transform for a point comprises an iterative determination of a calculated transform, wherein the initial calculated transform for said first iteration corresponds to said stored estimated transform for said point.

8. (Currently Amended) ~~A method in accordance with~~The method of claim 7 wherein said iterative determination comprises determining at each iteration a value indicative of the correspondence between the portion of said first image identified by said point and a portion of said second image identified by applying said calculated transform for said iteration and aborting said calculation if said correspondence is greater than a predetermined threshold after a predetermined number of iterations.

9. (Currently Amended) ~~A method in accordance with~~The method of claim 7 wherein said iterative calculation further comprises at each iteration comparing a calculated iterative transform for said iteration with data identifying one or more transforms and aborting said calculation if said iterative calculation matches said stored data.

10. (Currently Amended) ~~A method in accordance with~~The method of claim 7 wherein said iterative determination comprises at each iteration

determining a difference matrix identifying for each point in said portion of said first image identified by said point the difference in pixel values for said point and a corresponding point is said second image identified by applying to said points said calculated transform;

determining a derivative matrix identifying the rate of change of pixel values for said corresponding points in said second image; and

~~utilising~~utilizing said difference matrix and said derivative matrix to determine an updated transform.

11. (Currently Amended) ~~A method in accordance with~~The method of claim 10 wherein said determining a derivative matrix comprises:

for said first iteration determining said derivative matrix ~~utilising~~utilizing said stored estimated transform; and

for subsequent iterations determining an estimated derivative matrix ~~utilising~~utilizing the previous derivative matrix, and the differences between the previous and updated transforms and the differences between the previous difference matrix and an updated difference matrix calculated ~~utilising~~utilizing said updated transform.

12. (Currently Amended) ~~A method in accordance with~~The method of any claim 1 further comprising:

when said queue is empty, identifying a further seed point within said array for which no calculated transform has been determined and adding data identifying said further seed point to said queue.

13. (Currently Amended) ~~A method in accordance with~~The method of claim 1 further comprising:

illuminating a point in space ~~utilising~~utilizing three intersecting planes of light;

determining the relative positions of said first and second viewpoints and said intersecting planes of light;

providing an obstruction in the vicinity of said point;

obtaining first and second images of said obstruction illuminated by said intersecting planes of light;

processing said images to determine the relative positions of said first and second viewpoints to said illuminated point in space; and

~~utilising~~utilizing said determined transformations and positions to calculate the position of points in the surface of said object relative to said illuminated point in space.

14. (Currently Amended) ~~A method in accordance with~~The method of claim 13 wherein said obstruction has a striped appearance and said processing of images comprises:

processing said images of said object to determine the positions of points corresponding to illuminated portions of said stripes appearing in said images relative to said first view point;

identifying groups of points lying within planes; and calculating the position of said point in space from the point of intersection of said planes defined by the positions of said groups of points.

15. (Currently Amended) ~~A method in accordance with~~The method of claim 13 wherein said obstruction comprises a flat surface and said processing of images comprises:

identifying lines illuminated by said planes of light in said images; and

~~utilising~~utilizing the positions of the intersections of said lines in said images to determine the relative positions of said first and second viewpoints and said point in space.

16. (Currently Amended) ~~A method in accordance with~~The method of claim 15 further comprising:

moving said obstruction to a second position;

obtaining further images of said obstruction in said second position;

identifying lines illuminated by said planes of light in said images; and

~~utilising~~utilizing the positions of the intersections of said lines in said first and second images to determine the relative positions of said first and second view points in space.

17. (Currently Amended) ~~A method in accordance with~~The method of claim 13 further comprising:

storing data identifying points on a surface relative to a point in space;

determining a transformation required to match the surface identified by said calculated position of points with said stored surface.

18. (Currently Amended) ~~A method in accordance with~~The method of claim 17 wherein said determination comprises:

determining the projection of said stored points to said first view point;

determining for each of said projected stored points, the closest points in said array to said projected points; and

calculating said transformation for said surface on the basis of the transformations required to match each of said stored points to the points in space represented by the data for the points in the array determined to be closest to the respective projections of the stored points.

19. (Currently Amended) ~~A method in accordance with~~The method of claim 17 further comprising generating movement instructions to cause the surfaces of the object in said images to be aligned relative to said illuminated point in the same manner as said stored surface is aligned relative to a point in space.

20. (Currently Amended) ~~A method in accordance with~~The method of claim 17 further comprising generating an activation signal when said calculated transformation is indicative of a transformation of less than a predetermined distance.

21. (Currently Amended) ~~A method in accordance with~~The method of claim 1 further comprising:

obtaining model data indicative of the surface of said object viewed from a third view point;

~~utilising~~utilizing said calculated transforms to generate model data indicative of the surface of said object viewed from said first and second viewpoints; and

determining portions of said obtained model represented by said generated model by identifying projections of portions of said obtained model which project to said first view point and comparing the position of portions of said generated model corresponding to said projections.

22. (Currently Amended) ~~A method in accordance with~~The method of claim 21 further comprising deleting portions of said obtained model determined to be represented by said generated model wherein said portions of said obtained model are represented by data indicative of surfaces generated from data obtained from oblique images.

23. (Currently Amended) ~~A method in accordance with~~The method of claim 22 wherein said oblique images are determined ~~utilising~~utilizing said calculated transforms for said points in said array in said first image corresponding to said portions of said model.

24. (Currently Amended) ~~A method in accordance with~~The method of claim 22 further comprising generating a combined model from said obtained and generated models from which portions have been deleted.

25. (Currently Amended) ~~A method in accordance with~~The method of of claim 24 wherein said generation of a combined model comprises:

classifying points of overlap in said models;

generating new points representative of a boundary of said overlap between said models adjacent to said point if said classification of a point of overlap is of one or more predefined types;

deleting said points of overlap;

identifying portions of a combined model which define holes in a surface; and

generating a representation of the surface for said holes ~~utilising~~utilizing the points in said combined model defining the boundaries of said holes.

26. (Currently Amended) ~~A method in accordance with~~The method of claim 25 wherein said ~~utilising~~utilizing of the points defining boundaries comprises:

identifying a best fit plane ~~utilising~~utilizing said boundary points;

modifying said boundary points so said to be in said identified plane; and

generating a model representation of the portion of said identified plane bounded by said modified boundary points.

27. (Currently Amended) Image processing apparatus comprising:

a receiver operable to receive first and second images representative of the same object viewed from a first and a second view point;

a data store operable to store for each point in an array of points in a said first image, an estimated transform required to match a portion of said first image identified by said point corresponding to part of said object to the portion of a said second image representative of the same part of said object received by said receiver;

a queue store operable to store data identifying points to be processed;

an identification unit operable to identify an initial seed point within a said array and adding data identifying said seed point to a queue of data identifying points stored in said queue store; and

processing unit operable sequentially processing each of points identified by a queue stored in said queue store, by:

adding data to the end of said queue stored in said queue store identifying points which are adjacent to the point identified by data at the head of the queue and for which no calculated transform has been determined;

~~utilising~~utilizing said estimated transform stored in said data store for the point identified by data at the head of the queue stored in said queue store to determine a calculated transform for said point to match the portion of said first image identified by said point to said corresponding portion of a said second image received by said receiver; and

updating said estimated transforms stored in said data store for adjacent points in said array to said point for which a calculated transform is determined ~~utilising~~utilizing said calculated transform.

28. (Currently Amended) ~~An apparatus in accordance with~~The apparatus of claim 27 wherein said processing unit is operable to update estimated transforms stored in said data store for points by:

determining a first value indicative of the correspondence between said portion of a said first image received by said receiver identified by said point and a portion of a said second image received by said receiver identified by applying said estimated transform stored for said point by said data store to said portion of said first image;

determining a second value indicative of the correspondence between said portion of said first image received by said receiver identified by said point and a portion of said second image received by said receiver identified by applying said calculated transform for said adjacent point to said portion of said first image; and

if said second value is indicative of a closer correspondence, replacing said stored estimated transform for said point with said calculated transform for said adjacent point.

29. (Currently Amended) ~~An apparatus in accordance with~~The apparatus of claim 28 wherein said receiver is operable to receive first and said second images comprising grey scale images and said processing unit is operable to calculate as said first and said second values, calculated difference in grey scale values between said portion of said first image and said identified portion of said second image.

30. (Currently Amended) ~~An apparatus in accordance with~~The apparatus of claim 27 wherein said data store is further operable to store for each point data identifying in said array the number of times data, each point is added to said queue, said processing unit

being operable to add data to said queue identifying a point only if the said point has been added to said queue fewer than a predetermined number of times.

31. (Currently Amended) ~~An apparatus in accordance with~~The apparatus of claim 27 wherein said receiver is operable to receive a stream of video images comprising pairs of images representative of the same object viewed from said first and said second view point, wherein said data store is responsive to receipt of a new pair of images to store an estimated transform for matching points in said pairs of images of said video stream comprising calculated transforms for said points in said array for the previous frame of images in said video stream.

32. (Currently Amended) ~~An apparatus in accordance with~~The apparatus of claim 27 wherein said processing unit is operable to determine a calculated transform for a point by performing an iterative determination of said calculated transform, wherein the calculated transform for said first iteration corresponds to said estimated transform for said point stored in said data store.

33. (Currently Amended) ~~An apparatus in accordance with~~The apparatus of claim 32 wherein said processing unit is operable to determine at each iteration a value indicative of the correspondence between the portion of a said first image identified by said point and a portion of a said second image identified by applying said calculated transform for said iteration and aborting said calculation if said correspondence is greater than a predetermined threshold after a predetermined number of iterations.

34. (Currently Amended) ~~An apparatus in accordance with~~The apparatus of claim 32 wherein said processing unit is operable to compare at each iteration a calculated iterative transform for said iteration with data identifying one or more transforms and aborting said calculation if said iterative calculation matches said stored data.

35. (Currently Amended) ~~An apparatus in accordance with~~The apparatus of claim 32 wherein said processing unit is operable to determine at each iteration:

a difference matrix identifying for each point in a said portion of said first image identified by said point the difference in pixel values for said point and a corresponding point is said second image identified by applying to said points said calculated transform;

a derivative matrix identifying the rate of change of pixel values for said corresponding points in said second image; and

an updated transform determined ~~utilising~~utilizing said difference matrix and said derivative matrix.

36. (Currently Amended) ~~An apparatus in accordance with~~The apparatus of claim 34 wherein said processing unit is operable to determine a derivative matrix for a first iteration ~~utilising~~utilizing said stored estimated transform; and

for subsequent iterations determine a derivative matrix ~~utilising~~utilizing the previous derivative matrix, and the differences between the previous and updated transforms and the differences between the previous difference matrix and an updated difference matrix calculated ~~utilising~~utilizing said updated transform.

37. (Currently Amended) ~~An apparatus in accordance with~~The apparatus of claim 27 wherein said processing unit is operable when said queue is empty to cause said identification unit to identify a further seed point within said array for which no calculated transform has been determined and adding data identifying said further seed point to said queue stored in said queue store.

38. (Currently Amended) ~~An apparatus in accordance with~~The apparatus of claim 27 further comprises:

lasers operable to identify a point in space by illuminating said point ~~utilising~~utilizing three intersecting planes of light;

a determination unit operable to determine the relative positions of said first and second viewpoints and said intersecting planes of light; and

an obstruction provided in the vicinity of said identified point; wherein received images of said obstruction illuminated by said lasers received by said receiver are ~~utilised~~utilized to determine the relative positions of said first and second viewpoints to said illuminated point in space.

39. (Currently Amended) ~~An apparatus in accordance with~~The apparatus of claim 38 wherein said obstruction has a striped appearance and said processing unit is operable to:

process said images of said object received by said receiver to determine the positions of points corresponding to illuminated portions of said stripes appearing in said images relative to said first view point; and to

identify groups of points lying within planes; and calculate the position of said point in space from the point of intersection of said planes defined by the positions of said groups of points.

40. (Currently Amended) ~~An apparatus in accordance with~~The apparatus of claim 38 wherein said obstruction comprises a flat surface and said processing unit is operable to:

identify lines illuminated by said planes of light in images received by said receiver; and

to ~~utilise~~utilize the positions of the intersections of said lines in said images to determine the relative positions of said first and second viewpoints and said point in space.

41. (Currently Amended) ~~An apparatus in accordance with~~The apparatus of claim 38 further comprising:

a model store operable to store data identifying points on a surface relative to a point in space; and

a calculation unit operable to determine a transformation required to match a surface identified by said calculated position of points calculated by said processing unit ~~utilising~~utilizing said calculated transformations and a surface identified by data stored in said model store.

42. (Currently Amended) ~~An apparatus in accordance with~~The apparatus of claim 41 wherein said calculation unit is operable to:

determine the projection of said calculated points to a defined view point associating said points identified in said stored model in said model store with points of an array associated with said view point;

determine for each of said projected calculated points, the closest points in said array to said projected points; and

calculating said transformation for said surface on the basis of the transformations required to match said calculated points to the points in space represented by the stored data in said model store associated with the points in said array determined to be closest to the respective projections of the calculated points.

43. (Currently Amended) ~~An apparatus in accordance with~~The apparatus of claim 41 wherein said calculation unit is operable to generate movement instructions to cause the surfaces of the object in said images to be aligned relative to said illuminated point in the same manner as said surface represented by data stored in said model store is aligned relative to a point in space.

44. (Currently Amended) ~~An apparatus in accordance with~~The apparatus of claim 41 wherein said calculation unit is operable to generate an activation signal when said

determined transformation is indicative of a transformation of less than a predetermined distance.

45. (Currently Amended) ~~An apparatus in accordance with~~The apparatus of claim 27 wherein said apparatus further comprises:

a merging unit operable to obtain model data indicative of the surface of said object viewed from a third view point; and

determine portions of said obtained model represented by a said generated model generated ~~utilising~~utilizing said transforms calculated by said processing unit, by identifying projections of portions of said obtained model which project to said first view point and comparing the position of portions of said generated model corresponding to said projections.

46. (Currently Amended) ~~An apparatus in accordance with~~The apparatus of claim 45 further comprising a deletion unit operable to delete portions of said obtained model determined by said merging unit to be represented by said generated model wherein said portions of said model are represented by data indicative of surfaces generated from data obtained from oblique images.

47. (Currently Amended) ~~An apparatus in accordance with~~The apparatus of claim 46 wherein said deletion unit is operable to determine whether data is obtained from oblique images ~~utilising~~utilizing said calculated transforms for said points in said array in said first image corresponding to said portions of said model.

48. (Currently Amended) ~~An apparatus in accordance with~~The apparatus of claim 46 wherein said merging unit is operable to generate a combined model from said obtained and generated models from which portions have been deleted.

49. (Currently Amended) A method of image processing comprising:

obtaining a stream of video images representative of the same object viewed from a first and a second view point;

for each pair of frames representative of said object determining for an array of points of an image from said first view point corresponding points in an image from said second view point representative of the same part of said object; and

generating a model of the surface of said object ~~utilising~~utilizing the correspondence between points in said pairs of frames, wherein said determination of corresponding points comprises:

storing for each point in an array of points in said first image an estimated transform received to match a portion of said first image identified by said point corresponding to part of said object to the portion of said second image representative of the same part of said object and ~~utilising~~utilizing said estimated transforms to determine said corresponding parts, wherein the initial estimated transforms comprise calculated transforms for matching corresponding points in an earlier pair of image frames.

50-70. (Canceled)

71. (Currently Amended) A non-transitory data carrier storing computer implementable process steps for causing a programmable computer to perform an image processing method in accordance with claim 1.

72. (Currently Amended) A non-transitory data carrier storing computer implementable process steps for generating within a programmable computer an image processing apparatus in accordance with claim 27.

73. (Currently Amended) A non-transitory data carrier in accordance with claim 71 comprising a computer disc.

74. (Canceled)

75. (Currently Amended) A ~~computer disc~~ non-transitory disc in accordance with claim 73 wherein said computer disc comprises an optical, magneto-optical or magnetic disc.